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Inventor(s): John F. Corson

Serial No.: 10/066,157

Filing Date: January 31, 2002

Examiner: Samuel P. Stofke

Group Art Unit: 1743

Title: CALIBRATING ARRAY SCANNERS

COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Sir:

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on 03-20-2006. This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new grounds of rejection.)

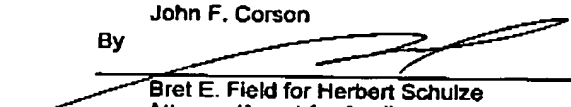
No fee is required for filing of this Reply Brief.

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Respectfully submitted,

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<b>REPLY BRIEF</b>  Address to: Box DAC Assistant Commissioner for Patents Alexandria, VA 22313-1450	Attorney Docket	10010382-1
	First Named Inventor	John F. Corson
	Application Number	10/066,157
	Filing Date	January 31, 2002
	Group Art Unit	1743
	Examiner Name	Samuel P. Siefke
	Title: <i>Calibrating Array Scanners</i>	

Sir:

This Reply Brief is in response to the Examiner's Answer mailed by the Office on March 20, 2006.

Please charge any required fees to Deposit Account No. 50-1078, order number 10010382-1.

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### **REPLY BRIEF**

In this Reply Brief, the Appellants address comments made in the Examiner's Answer. The Examiner has raised no new grounds for rejection. The Appellants note that all arguments presented in the prior Appeal Brief still apply with equal force, but are not reiterated in full herein solely in the interest of brevity and for the convenience of the Board.

The comments of the Appellants with regard to the Examiner's assertions in the Examiner's Answer are provided below, with a separate header for each maintained ground of rejection (as in the Appeal Brief).

I. Claims 15-21, 27, 29-30, 33-37, 39-45 and 47-48 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Overbeck et al. (WO 99/47964).

The major point of contention between the Examiner and the Appellants appears to be whether adjusting the focus of an array reader (as assertedly taught in Overbeck et al.) is encompassed by calibrating a sensitivity setting of the detection system of an array reader as is claimed. In maintaining this rejection, the Examiner states:

The Examiner relies on the broadest interpretation of calibration of a sensitivity setting and determines that **adjusting for perfect focus** throughout the prescan and continually adjusting the position of the microscope slide under the examination scan based upon the stored prescan data for pitch and bow **teaches the limitation of adjusting a sensitivity setting in the detection system.** (*emphasis added*)

Based on the discussion below, the Appellants respectfully disagree with the Examiner's position. Specifically, the Appellants submit that by asserting that adjusting the focus of an array reader is encompassed by calibrating a sensitivity setting of the detection system of an array reader, the Examiner has misinterpreted the claims of the subject invention.

With regard to claim interpretation, MPEP §2111 states:

During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).

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The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999).

First, The Appellants submit that the Examiner has interpreted the claims in a way that is inconsistent with the specification. Specifically, the specification clearly describes the steps of focus adjustment and calibrating a setting of the detection system as distinct and non-overlapping.

For example, the paragraph from page 14, line 29 to page 16, line 3 describes an exemplary method of the invention in which focus adjustment and calibrating a sensitivity setting of the detection system are characterized as distinct steps. In this paragraph, focus adjustment is described from page 14, line 29 to page 15, line 26. The paragraph then states the following (page 15, lines 26 to 28):

The average maximum signal for each channel can then be used to calibrate the detection system sensitivity in the corresponding channel since calibration member should yield the same signal in a channel over time. (*emphasis added*)

This sentence makes it clear that focus adjustment, described previously in the paragraph, is a separate and distinct function from calibrating a sensitivity setting of the detection system. Therefore, one of skill in the art, upon reading the subject specification, would not consider focus adjustment as being encompassed by the step of calibrating a sensitivity setting of the detection system as is claimed.

Second, the Appellants submit that the Examiner has interpreted the claimed methods in a way that is inconsistent with the interpretation of those of skill in the art.

As shown below, independent Claims 15 and 39 contain method steps drawn to both focus adjusting steps and detector sensitivity calibration steps (only the relevant steps of claims 15 and 39 are shown):

In Claim 15:

- b) adjusting a position of the calibration member, when in the reading position, relative to the focal plane;
- c) determining the position of the focal plane from the light detected at various adjustments; and
- d) calibrating a sensitivity of the detection system from the detection system signals generated from the calibration member.

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In Claim 39:

- iv) adjusting the position of the calibration member relative to the detection system;
- v) repeating steps (ii) to (iv) until a focal plane of the detection system can be determined from the calibration signals generated at various adjustments; and
- vi) calibrating at least one sensitivity setting of the detection system from the calibration signals generated from the calibration member when positioned at the focal plane of the detection system;**

In Claim 15, steps *b* and *c* (underlined) specify adjusting the focus of the array reader while step *d* (in bold) specifies **calibrating a sensitivity of the detection system**. In Claim 39, steps *iv* and *v* (underlined) specify focus adjustment and step *vi* (in bold) specifies **calibrating at least one sensitivity setting of the detection system**.

As such, by asserting that focus adjustment of an array reader is encompassed by calibrating a sensitivity of the detection system of an array reader, the Examiner is ignoring that the claims themselves explicitly exclude this interpretation. Specifically, this interpretation would render step *d* of Claim 15 and step *vi* of Claim 39 redundant to previously recited steps. One of skill in the art therefore would not interpret the claims in this way.

As such, the Appellants submit that the Examiner has failed to interpreted the claimed methods in a way that is consistent with the interpretation that those of skill in the art would reach, as is required under MPEP § 2111.

Another point of contention between the Examiner and the Appellants is with regard to whether the prescanning assertedly taught in Overbeck et al. teaches or suggests scanning a uniform fluorescent layer on a calibration member as is claimed. The Examiner maintains that this is the case, stating:

Overbeck teaches prescan of the microscope slide using a chosen grid of points on the microscope to calibrate the focal length. Overbeck further teaches that measurements are made using fluorescent detection. It would have been obvious to one of ordinary skill to prescan the slide using a fluorescent grid in order to calibrate with the same type of light being detected during measurement. As to a uniform layer versus a grid of points, it would have been obvious to employ an expanded grid to provide the most optimum picture of the slide during prescan in order to provide the most accurate adjustment of the focal length during analysis. (*emphasis added*)

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The Appellants submit that the Examiner has failed to provide any objective evidence for why one of skill in the art would modify the teachings of Overbeck et al. to result in the claimed invention. The Appellants submit that the reasoning of the Examiner is inconsistent with the MPEP, as outlined below.

With regard to establishing a *prima facie* case of obviousness, MPEP § 2143.01 states the following:

The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness **without some objective reason** to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000)

If proposed modification would **render the prior art invention being modified unsatisfactory for its intended purpose**, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

If the proposed modification or combination of the prior art would **change the principle of operation of the prior art invention being modified**, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)  
(*bold added*)

As discussed in the Appeal Brief, the Appellants again submit that the Examiner has provided no citation in Overbeck et al. that teaches or suggests a calibration member having a uniform fluorescent layer.

The pre-scanning step disclosed in Overbeck is of the experimental slide of interest and not an independent calibration member. Therefore, the prescanning and the "final" scanning are performed on the same slide. In describing the types of slides that can be scanned, Overbeck provides the following examples: histology slides that carry tissue samples, cell cultures, arrays of diagnostic reagents exposed to blood, tissue cultures, DNA arrays, DNA chips, and segregated samples

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from gel electrophoresis. None of these examples represent slides having a uniform fluorescent layer.

The stated objective of the prescanning operation of Overbeck is summarized on page 33, lines 20-25, which reads:

After the fast pre-scan has been performed, the best focus found from the acquired data, and a relatively crude version of the image, based on prescan data, has been displayed to the operator, the operator selects the portions of the image to be scanned. (p. 33, lines 20-25)

As can be seen from this, pre-scanning is specifically tailored in Overbeck et al. to: 1) provide best focus, and 2) provide a crude version of the image of the slide to be scanned. The user then selects the portions of the image to be scanned.

In asserting that this teaching of Overbeck et al. *suggests* scanning a calibration member having a uniform fluorescent layer as is claimed, these questions must be addressed by the Examiner:

- 1) Where in Overbeck et al. is the desirability of making this proposed modification found?
- 2) What is the objective reason for making this proposed modification?
- 3) Does the proposed modification render the scanning process of Overbeck et al. unsatisfactory for its intended purpose?
- 4) Does the proposed modification change the principle of operation of Overbeck et al.?

With regard to 1 and 2, the Examiner has failed to point to any citation in Overbeck et al. (or any other reference) that suggests the desirability of making the proposed modification to the scanning methods disclosed therein. Nor has the Examiner provided any objective reason for making this modification. The Examiner has merely asserted that it would have been obvious to prescan the slide as claimed "*in order to calibrate with the same type of light being detected during measurement*" and "*in order to provide the most accurate adjustment of the focal length during analysis*". However, the method disclosed in Overbeck et al. already calibrates with "the same type of light being detected during measurement". How, then, does this suggest using a different calibration member having a uniform fluorescent layer? Furthermore, how does using a calibration member having a

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uniform fluorescent layer provide the most accurate adjustment of the focal plane? The Examiner does not explain or provide any citation that discloses that calibrating with a uniform fluorescent layer is superior to using a non-uniform fluorescent layer with regard to focus adjustment.

With regard to 3 and 4, the Appellants submit that modifying the Overbeck et al. pre-scan method to include using a slide having a uniform fluorescent layer would render it non-functional for its intended purpose. Specifically, scanning a uniformly fluorescent calibration member in the method of Overbeck et al. would display to the operator a rough image of the uniform fluorescent layer and not an image of the slide to be scanned. Without providing an image of the slide to be scanned, the operator cannot select a portion of the array for the final scan which is an explicitly-stated purpose of the pre-scan disclosed in Overbeck et al. (see above). In other words, it would be impossible for an operator to select a specific region of a pre-scanned slide for final scanning if something other than the slide itself was pre-scanned. Therefore, the Appellants contend that the principle of operation of Overbeck et al. would have to be changed to accommodate employing a calibration member having a uniform fluorescent layer in the pre-scan disclosed therein.

Given the discussion above, the Appellants submit that there is clearly no suggestion or motivation to make the proposed modification to the teachings of Overbeck et al. as asserted by the Examiner (i.e., scanning a calibration member having a uniform fluorescent layer). Given this lack of suggestion or motivation, it appears that the Examiner has used the Appellant's own disclosure as a motivation to force grounds of rejection in this case. For a justifiable rejection under 35 U.S.C. § 103(a) to be made, the invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time, *see Interconnecting Planning Corp. v. Feil*, 774 F.2d 1132, 1138. In other words, modifying the teachings of a prior art reference without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability. This is the essence of impermissible hindsight, *see In re Dembiczak*, 50 U.S.P.Q.2D 1614.



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To summarize, the Appellants again submit that Overbeck et al. fail to teach 1) calibrating a sensitivity setting of the detection system (an element of all rejected Claims), and 2) using a calibration member having a uniform fluorescent layer (an element of Claims 15-16, 18-21, 27, 33-38 and 43-45). As such, the Appellants respectfully request reversal of this rejection.

II. Claims 38 and 46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Overbeck (WO 99/47964) and further in view of King et al. (US 5,812,272).

As discussed above and in the Appeal Brief, Overbeck et al. fails to teach or suggest at least the elements of 1) calibrating a sensitivity of the detection system of an array reader, and 2) a calibration member having a uniform fluorescent layer (elements of both Claims 38 and 46). As King et al. is cited merely for its asserted teaching of Cy5 and Cy3 fluorescent dyes/labels, it fails to remedy these deficiencies in Overbeck et al.

Therefore, the Appellant submits that a *prima facie* case of obviousness has not been established for Claims 38 and 46 and respectfully requests reversal of this rejection.

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**SUMMARY**

The Appellants respectfully request that all rejections under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner with instructions to issue a Notice of Allowance.

Respectfully submitted,  
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